

AAAI Ask the Expert

Vitamin D in childhood asthma

Q:

4/12/2012

I have a 10 year old asthmatic with recurrent asthma exacerbations. Currently he is on Advair 230/21--2 puffs every 12 hours and Singulair 5 mg. As he has been on prednisone many times in the past, I had Vitamin D level done. The level was 14 ng/ml. (30-100 ng/ml) How should I go about starting him on PO Vitamin D supplements to achieve a serum level of 30 ng/ml which hopefully may decrease his systemic/inhaled steroid dependence? How soon should I repeat his vitamin D levels after altering the supplements? Thanks.

A:

Thank you for your inquiry.

There are a number of excellent sources detailing methods for dosing vitamin D in children. These are available to you online without charge. Below you will see links to such references.

In *Pediatrics* 2008, there is an extensive review of vitamin D deficiency, and contained within this review are dosing regimens. The Mayo Clinic also has recommendations for replacement, as does the School of Medicine (Barts) in London. By clicking on the links below, you will be able to pull up each of these references without charge.

As you will see, replacement and monitoring can be somewhat complicated if one takes into consideration the nuances of sunlight, diet, and vitamin D metabolism.

To obtain a clinical perspective on this for you, I have asked Dr. Michael Blaiss, who has recently reviewed the literature regarding vitamin D replacement and asthma, to comment on his approach to vitamin D supplementation in asthmatic children. When I hear from Dr. Blaiss, I will forward his response to you. In the meantime, I think you will gain a great deal of information from the links copied below.

Thank you again for your inquiry and we hope this response is helpful to you.

<http://pediatrics.aappublications.org/content/122/2/398.full.pdf+html>

Pediatrics 2008;122;398. Vitamin D Deficiency in Children and Its Management: Review of Current Knowledge and Recommendations

<http://www.icms.qmul.ac.uk/chs/Docs/42772.pdf>

Source: School of Medicine, Barts London

http://www.mayoclinic.com/health/vitamin-d/NS_patient-vitaminD/DSECTION=dosing

Source: Mayo Clinic

Sincerely,
Phil Lieberman, M.D.

We received a response from Dr. Michael Blaiss. Thank you again for your inquiry and we hope this response is helpful to you.

Sincerely,
Phil Lieberman, M.D.

Response from Dr. Michael Blaiss:

There is definite interest in the role of Vitamin D and atopy and asthma. Many articles have been published showing a relationship with severity of asthma, asthma exacerbation, and exercise-induced bronchoconstriction and decreases in serum Vitamin D. Of course this does not prove a cause and effect. So until we see the results of double-blind placebo control trials with Vitamin D supplementation in children, we will not truly know if it is beneficial or not in improving asthma control.

As far as dosing, I agree with the *Pediatric* 2008 article by Misra et al:

We recommend treating infants and children who are vitamin D insufficient or deficient with 1000 IU/day of vitamin D for infants \leq 1 month old, 1000 to 5000 IU/day for children 1 to 12 months old, \leq 5000 IU/day for children \leq 12 months old, and $>$ 5000 after the age of 1. Vitamin D levels should subsequently be maintained with 400 IU of vitamin D supplementation per day. For patients who demonstrate poor compliance, a high dose of vitamin D may be given as a single dose or repeated intermittently.

Usually it will take up to 2 to 3 months in children deficient to get a therapeutic level so watch serum levels.

Brehm JM, Celedon JC, Soto-Quiros ME, et al. Serum vitamin D levels and markers of severity of childhood asthma in Costa Rica. *Am J Respir Crit Care Med*. 2009;179:765-771.

Alyasin, S., T. Momen, et al. (2011). The relationship between serum 25 hydroxy vitamin d levels and asthma in children. *Allergy, Asthma & Immunology Research* 3(4): 251-255.

Chinellato, I., M. Piazza, et al. (2011). Vitamin D serum levels and markers of asthma control in Italian children. *The Journal of Pediatrics* 158(3): 437-441.

Chinellato, I., M. Piazza, et al. (2011). Serum vitamin D levels and exercise-induced bronchoconstriction in children with asthma. *The European Respiratory Journal*: official journal of the European Society for Clinical Respiratory Physiology 37(6): 1366-1370.

Sincerely,
Michael S. Blaiss, M.D.